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Table of Contents

PAGE

OPPORTUNITIES FOR SIGHT CONSERVATION IN MEDICAL CARE PROGRAMS, Eileen E. Lester 123

THE NURSE'S RÔLE IN THE PREVENTION OF BLINDNESS AND CONSERVATION OF SIGHT, Martha Zavonia, R.N. 133

USE OF MEDICAL SOCIAL WORKERS IN SIGHT CONSERVATION, Elizabeth E. Payne 138

OCCUPATIONAL THERAPY IN EYE WARDS, W. O. G. Taylor, Major, R.A.M.C. 148

THE UNDEVELOPED EYE, F. Elizabeth Jackson, M.A. 152

THE EYES OF INFANCY AND CHILDHOOD, James H. Delaney, M.D. 159

NOTE AND COMMENT:

National Society's 1948 Conference 166
Vision Testing Project Announced 166
Leslie Dana Award 167
Eye Institute Held in Oak Ridge, Tennessee 167
Volume on Industrial Ophthalmology Released 168
Eye Institute Attracts Wide Interest 168
Industrial Ophthalmology Committee Names Chairman. 169

PAGE

A New Book and a Revision 169
Eighth Annual Congress on Industrial Health 169
1948 Institute on Corrective and Remedial Reading 170
Government Issues Report on Eyesight and Environment in Work Production 170
Pan-American Congress of Ophthalmology 172
Eye Laboratory Established in California 173
Conference on Local Health Units 174
Social Work Scholarship Grants 175
Industrial Sight Conservation in New Jersey 175

CURRENT ARTICLES OF INTEREST 177

BOOK REVIEWS 181

CONTRIBUTORS TO THIS ISSUE 184

Medical
Direct
1-11-49
Shortage

Opportunities for Sight Conservation in Medical Care Programs*

Eileen E. Lester

CITING official as well as voluntary agencies which have responsibilities for eye health, the writer points out the need to recognize eye care as an important part of the total health services provided for children.

ONE of the most fundamental human rights is the right of every individual to the maximum degree of physical and emotional health which can be obtained with the aid of scientific knowledge and technical services at the disposal of the nation. During the past decade positive preventive activities have been added to the functions of federal and state governments. During the same period there has been a growing public appreciation of the advantages and possibilities of prevention in all health matters. There has also been an acceptance that those knowledges and services—which deal primarily with the prevention of disease, the promotion of health in a positive sense, and the detection of incipient disease—form a part of the basic community health program and that these services should be available for every person at every economic level.

In view of the magnitude and complexity of the task of providing adequate public health services for all our citizens, there is a growing recognition that increasing amounts of public funds will be needed to assist states and local communities to develop and extend their public health program. Regardless of the great strides which have been made in the extension of the work of state health departments by the creation of county health units, we all know

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that large areas of our country are yet unserved by organized health departments and that effective health services cannot be developed in the absence of this basic health organization.

Studies of the causes of various health hazards have revealed areas of prevention, and our health departments have not only accepted these but are providing a variety of services which will either eliminate or reduce these dangers. This has been true not only in the general public health field, but in the specific health field in which we are primarily interested today, namely that of conservation of sight and prevention of blindness. We all agree that prevention is one of the primary objectives of a good public health program. Prevention as well as early discovery of vision defects should be a function of all our public health workers.

Medical and allied services needed by the physically handicapped have during the past century developed largely under the auspices of specialized organizations. As our community-wide public health programs are developed with the use of public funds, it becomes important to integrate as much as possible the many specialized, differentiated, and heterogeneous programs in order that every individual can benefit from the variety of services provided by these agencies. If a really meaningful health program is to be developed, we must recognize the needs of the whole individual and not just certain aspects of his health problem. We have been apt to use the word blind to fully describe a child's problems and needs. All of us know, however, that first he is a child with the same basic instincts, drives, needs, and interests of all children. The fact that he has a visual handicap is an important but secondary factor.

From experience in the public health field as well as in a specialized agency serving the visually handicapped, I have learned that there are many opportunities (in the total public health and medical care program of our communities) for more integration of existing services and resources for the early discovery and treatment of visual defects. Actually our health departments are doing more in the field of prevention of blindness than we give them credit for. We fail sometimes to appreciate the volume of services in this field because the activities of the health department are not concentrated in any one special division but are part of almost every division in the health department. To health departments in our

states, have been assigned, by law, many important activities which contribute directly to the prevention of visual defects. Among these are the enforcement of the use of a prophylactic in the eyes of newborn infants to prevent ophthalmia neonatorum; the reporting and control of communicable diseases which may be menaces to eye health; reporting on the birth certificates of any congenital defect including eye defects; and premarital and prenatal tests for syphilis. Other activities performed by the health department in this field are the services of the public health nurses in case finding among children and adults with eye defects or other conditions in which attention to the eyes is important; provisions of health examinations as part of the health supervision given certain groups, such as infants or school children; inspection of environments by safety engineers and industrial hygiene personnel to discover hazards which may affect the health or vision of individuals; and health education activities including the dissemination of information on general or related subjects such as nutrition, industrial hazards, organic diseases, and venereal diseases, which have relationship to the eyes and vision.

All of us who have had experience in sight conservation programs are aware that numerous governmental and voluntary agencies are performing services which are equally as important as those which are the function of our health agencies. Unless there is an awareness of the importance of these activities and an attempt to coordinate them into a unified program, we will not really accomplish our objectives. Time will permit me to mention only a few of the other agencies performing services which, combined with those of the health departments, provide all of the ingredients needed in a statewide comprehensive program to conserve sight and prevent blindness. Among the governmental agencies or departments with responsibilities for activities directly affecting the eyes are: departments of education, welfare, labor, and agriculture; division of motor vehicles; vocational rehabilitation services; workmen's compensation programs; the legislative branches of our state governments; and the state universities and colleges with facilities for the training of professional personnel needed by various programs with services for the visually handicapped. At the same time we must not forget or minimize the contribution made by voluntary agen-

cies, the safety programs of industry, and the support given by informed groups of citizens in the securing of appropriations for governmental agencies in order that more adequate services and facilities in all these fields can be developed.

A broad concept of medical care has never been limited to the treatment of physical illness, alone, but has combined the treatment of the physical illness or handicap with the treatment of unfavorable social factors which influence the effectiveness of medical care and contribute to the degree and duration of the disability. There is an increasing emphasis in medical practice on the preventive approach and on the social and community aspects of health. The development of medical care programs by health departments has resulted in an increased need for liaison and coordinative services. The medical social worker brings to public health programs an emphasis upon the social aspects of health and medical care, and helps further the integration of medical and social treatment. She functions in continuous association with all of the professional personnel and does not duplicate any of the services provided by other members of the public health staff.

As a specialist in social problems related to health and medical care, the medical social worker provides consultant services to all workers of the health department on individual or community problems that interfere with the effectiveness of health. Through her liaison activities she attempts to strengthen the integration of health and welfare service. Also she shares with the physician and the nurse responsibility for individualizing the services provided to meet the patient's needs. Only when there is an opportunity for individualization can there be assurance that the patient will be able to profit as fully as possible from medical care. Every patient needs a chance to talk with an understanding person about his problem so that he can face the situation confronting him and can be helped to assume responsibility for following medical recommendations and to adjust his activities within the limitations imposed by his illness. As a member of the health department staff, the medical social worker is in a strategic position to know the extent of unmet social needs and she can help communities more effectively use their existing facilities as well as assist them in developing appropriate and needed services. All social workers are

concerned with the well-being of the individuals with whom they work. If this is true and if social workers will agree that a child's eyes are his most important channel of learning, then all of us—whether we work directly with children or not—have a responsibility to participate in any activities which will conserve their vision. The development of our social security programs has resulted in the employment in recent years of medical social workers in federal, state, and local departments of health, welfare, and rehabilitation services. I believe that the medical social worker in these programs has many opportunities to contribute to sight conservation. In addition, her efforts can be reinforced by other members of the professional team with whom she works. This team will consist of physicians, social workers, and nurses, and may include, depending somewhat upon the special emphasis of the program, nutritionists, physical therapists, psychologists, speech therapists, teachers, vocational guidance specialists, occupational therapists, and other trained professional workers.

I should like to mention specifically several health programs in which I believe opportunities exist to give more attention to the importance of good vision and the need to conserve sight. The first of these is the crippled children's programs. You may all know that federal aid to states for services for crippled children was first authorized in 1935 by the Social Security Act. That action has made possible the development of a nation-wide program of medical, surgical, and after-care services for the physical restoration and social adjustment of crippled children. These programs have primarily served children with orthopedic or plastic conditions but it is recognized that there are many other types of crippling conditions among children for whom little or no provision for care has yet been made. Some of these disabilities are rheumatic fever, impaired vision or hearing, and diabetes. A number of the programs do accept children with congenital cataracts or strabismus as coming under their definition of a crippled child, and provide ophthalmological treatment, glasses, and after-care services.

The purpose of the crippled children's programs is to help each crippled child attain the best possible physical condition and at the same time help him develop his potentialities as fully as possible within the limitations of his handicap. In order to accomplish this

goal, the state crippled children's programs have attempted insofar as possible to provide complete and full care for all children accepted under their programs. This concept of complete care for the whole child permits a child with an orthopedic or plastic condition to receive as part of his total medical care plan, an eye examination, treatment, and glasses. Too often those of us who work in crippled children's programs fail to discover the child who needs eye attention at a time when the necessary specialized services could be given to him. Unfortunately the physical examinations given many of our children fail to include procedures for the detection of visual defects. Unless we who work with children become much more observant and alert to indications of visual disturbances, we will miss the opportunities which we have to discover eye difficulties before they become serious and interfere with the child's normal development.

We have opportunities to discover individual needs of children as we observe them in a variety of settings—in clinics, hospital wards, convalescent homes, foster homes, institutions for handicapped, dependent, or delinquent children, regular or special school facilities for exceptional children, camps, and nursery schools, or as we work with teachers, social workers, welfare workers, vocational rehabilitation workers, camp directors, and nurses. At those times, we should be conscious that often certain disturbing types of behavior may possibly be due to a child's inability to see. A child who appears dull or clumsy and fails in school or is inattentive and uninterested in either school or play activities requiring keen vision should be given a careful eye examination.

In our children's hospitals and convalescent homes, among other things, we should be aware of the importance of adequate lighting, good posture, and easily read printed materials. Crippled children need opportunities for diversional and occupational play as well as school instruction. Frequently such children are in casts or on frames which require them to lie in abnormal positions. Unless special attention is paid to the play and school materials given to them at those times and to the facilities provided for their eye comfort, eyestrain may result.

The medical social worker who is part of the staff of a state crippled children's program also has an opportunity, during the

post-clinic conference when final recommendations are made for each child seen at the clinic, to call attention to the total needs of the child on the basis of data obtained by the physicians, nurses, and social workers. Any evidence of a possible visual difficulty which the medical social worker has secured during her social study of the child can be discussed and plans made to provide the necessary eye care during the time the child is under active treatment for his crippling condition.

Special attention should be given to the vision of children who have a hearing loss, particularly if severe enough to require that the child learn to read lips. Children with severe speech defects also need good vision if they are to observe and imitate the way the speech therapist uses her lips, tongue, and teeth in learning correct speech.

Children having severe orthopedic defects, cerebral palsy, or children ill with rheumatic fever will be unable to participate in play activities requiring physical skills and endurance. Frequently they secure their satisfactions from reading or hobbies which require continuous perception to detail. Eye muscles of these children need protection from fatigue. A diversified program of activities will help to prevent eyestrain. It is necessary that these children develop good eye habits which include proper reading posture, periods of eye rest, adequate light, use of reading racks, and the avoidance of reading materials with too fine print on a poor quality of paper. Also, if these children are doing draft or hobby work, possible eye hazards should be eliminated insofar as possible.

Another program which offers almost limitless possibilities for conservation of sight is the maternal and child health program which has been developed in every state with the help of federal funds made available by Congress under the Social Security Act. A maternal and child health program is designed to protect, promote, and conserve the mental and physical health of children from the prenatal period through adolescence, and of their mothers throughout the reproduction cycle. I should like to mention the maternal and child health activities in which I believe that more attention could be given to the eyes as part of the total health services provided for mothers and children. One of these is at the prenatal clinic, during the physical examination of the expectant

mother. The medical social worker could help the woman arrange for eye care along with any other recommended treatment, if its need is discovered by the physician and nurse.

The medical social worker in a maternal and child health program would have many opportunities to help parents obtain eye care for their children if more attention were given to the examination of the eyes and the importance of good vision as part of the total health supervision of the growing child. The aim of a good health program for children is a continuity of health supervision and treatment services from infancy through adolescence. Today many of our maternal and child health programs are providing a variety of services for the infant, including special facilities, nursing, and medical care for the premature and newborn baby, as well as continuous health supervision for the infant. The child health conference offers an excellent chance to detect any unusual eye condition or visual defect because the emphasis is upon keeping the child well by providing medical and nursing supervision, plus instructions to the parents, regarding the care and training of the young child. In these conferences, the medical social worker can often help the physician and nurse obtain for the child with a visual defect the special services which he needs. Sometimes she can help parents recognize their child's special needs and assist them in using available community resources.

Nursery schools usually require a physical examination of all children prior to admission, and health supervision during the period of attendance. These examinations, plus the observations of the teacher, should reveal any eye difficulty that exists. The nursery school teacher has a real responsibility to protect the eyes of the young child from eye fatigue and strain. Also, she should attempt to eliminate all possible accident hazards from the environment and play equipment. In addition, she can play an important rôle in the teaching of health habits which will safeguard eyes. All of us must help the teacher by providing knowledge and assistance if we expect her to be alert to significant behavior which may denote visual defects. Many preschool children receive physical examinations as part of their preparation for school, and at this time particular attention should be given to the detection of eye difficulties and their treatment.

Since the first six years of a child's life coincides with a significant period of eye growth and development of visual powers, it is important that visual defects be discovered as soon as possible. Once a visual defect has been detected, the medical social worker along with the physician and nurse must try to obtain for the child treatment which will correct the defect. If correction is not possible we must help the parent discover and use resources which will assure the best possible adjustment in spite of the visual handicap. The medical social worker can be particularly helpful because loss of vision is a threatening experience and parents need help in accepting the child's limitation and in providing the type of care which the child will need if his loss of vision is not to interfere with his physical, emotional, intellectual, and social development.

Another very important period of the child's life when particular attention should be paid to his eyes is during the school years. It is essential that there be provisions for the detection of eye defects and follow-up services to secure correction in the preventive health service provided for our school children. The teacher, with the help of the public health nurse, has responsibility for discovering and arranging for the examination and treatment of those children who have demonstrable eye defects. The social worker can assist them in securing treatment and glasses if other resources are not available for this purpose. The teacher is in a strategic position not only to discover early eye defects but to conserve the sight of her pupils. If we expect her to assume this responsibility we must help her develop an appreciation of what constitutes good eye health as well as give her specific information regarding signs of eye difficulties and hazards to vision.

A few of our maternal and child health programs provide mental hygiene services for children, and it is very important that a child with personality difficulties be given a complete physical examination which includes provisions for the examination of the eyes prior to being referred for treatment services. Correction of all physical defects must be made because sometimes there is improvement in antisocial behavior when a child who has been greatly handicapped by poor vision is able to see without difficulty.

All of us in public health and medical care programs need to be aware that eye difficulties are not something apart from the rest of

the child's health. Eye care should be thought of as an important aspect of the total health services provided for every child. And the medical social worker who is well informed regarding symptoms of visual difficulties and resources available for examination and treatment can contribute a great deal to conservation of sight activities. In contacts with social workers, teachers, parents, vocational rehabilitation agents, and others who work with children, she can interpret in all of our preventive health services the need for eye examinations and point out the social implications of eye defects. She can stimulate each individual to become more aware of actual or potential eye difficulties. Also, she can work toward the inclusion of eye services in the existing programs of health, welfare, education, safety, rehabilitation, and social services in our communities.

The Nurse's Rôle in the Prevention of Blindness and Conservation of Sight*

Martha Zavonia, R.N.

AUTHOR points out opportunities which a nurse has for participating in sight conservation activities.

TWO weeks ago I had the rare opportunity of attending the International Council of Nurses in Atlantic City. Approximately 7,000 "women in white" met to discuss their common problems. We did not wear the traditional white uniform, but each in the dress of her own country mingled and exchanged problems with others who came from distant lands.

A key problem was concerned with the universal health situation. Miss Van Voorthuysen of Holland said that "today the nurse must not be just a 'sick' nurse, but a 'health' nurse. In other words we cannot take care of all the sick. Let us teach the people how to stay well!"

Today, we are gathered here to discuss one phase of this great project—the nurse's rôle in the conservation of sight and prevention of blindness. In order for the nurse to promote eye health among those about her, one thing necessary is a good knowledge and understanding of conditions affecting the eye, and the causes, symptoms and complications resulting from them. Now, before she can grasp a knowledge of even the most common of eye conditions, she must know the normal eye, with its delicate structure and the mysteries of its complex mechanism. It is only when she has delved into the anatomy and physiology of the eye that she becomes interested in helping to preserve the function of these most precious organs.

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The nurse, as we noted before, has a twofold rôle—that of prevention and of administration of treatment—the "health" nurse, and the "sick" nurse.

Let us look into our varied rôles. The public health nurse or any nurse in the prenatal clinic has an opportunity to teach eye health. Has the patient had an eye examination? Eye examinations are done not only to check vision but often to serve as an index to the patient's general condition. Is the young mother-to-be watching her calories because she fears obesity? The nurse must explain to her the importance of proper food to the health of her baby's eyes. Is she eliminating butter and doesn't she like vegetables? These are the chief sources of vitamin A which is so vital to the proper development of the eye.

Perhaps the expectant mother is negligent in getting treatments. It is often the nurse's duty to explain the importance of these treatments—not only the importance to the mother, but to the child. I am sure all of you have seen the child who has interstitial keratitis. The chief characteristic is photophobia so extreme that the child hides his face in the pillow or plays in the darkest corner he can find. This is one of several conditions which can be prevented by medical prenatal care.

Following the baby's birth, the physician instills the preventive drops. But silver nitrate has no way of standing guard over the eye indefinitely. The eyes may become infected when bathing the baby shortly after birth. The nurse, unless she is very careful, may wipe the brows that are teaming with bacteria and carry the organisms to the lid margins. In a day or two the eyes become red, swollen, and tense, and pus forms with unbelievable rapidity. Of course, this is only one way that the newborn's eyes are infected. The carrying of bacteria on a mother's hands, the transfer of germs by the lips of various members of the family who kiss the child, and the placing of a child in a bed other than his own are three of the many ways that eyes may become infected.

It is important that the nurse teach parents these points. The gonococcus is not the only organism that causes newborn baby's "sore eyes." Ophthalmia neonatorum may be caused by the same organisms that cause sore throat, pneumonia, and other infections. Perhaps, the most effective way to teach eye health to the mother

is for the nurse to exercise meticulous care in treating the eyes by being scrupulously clean and gentle. Let us assume for a moment that the eyes are infected. The doctor's orders are administration of an antibiotic and irrigations. Let us not be lulled into a sense of security that penicillin will clear up the disease in no time. Remember that no matter how miraculously the drug acts you must stand by with thorough irrigations every 30 minutes or 15 if necessary to keep the eyes free from pus until such time when the drug has taken effect and pus is no longer forming. In no other disease is the nurse's rôle so important to saving sight as in ophthalmia neonatorum. Pus pressing against the delicate cornea will cause corneal ulcer and blindness.

Then there is the proper choice of toys. The nurse can point out to the mother the danger of sharp or small, poorly constructed toys. The older child's darts, bows and arrows, and rifles are only a few toys that have cost a child the loss of his eye.

While making visits the nurse is alert to eye symptoms and gives the proper instructions. It is important that a young child whose eye turns in, be taken to an eye physician. The mother may say, "I'll wait till she is ready for high school." The nurse must explain the importance of prompt and early treatment while the eye is still in process of developing. Much can be done to correct the crossed eye, and I may add, save the vision because the child whose eyes do not focus on the same point sees double. Seeing double is annoying. Therefore, she suppresses or blots out the vision in that eye. Soon, through lack of use, it truly becomes a blind eye. Consequently, the child will have but one seeing eye. The unsightly appearance of the youngster will cause her to be ridiculed and nicknamed by her playmates, thus seriously affecting not only her vision but her personality. An operation later in life results in a cosmetic effect alone.

Vision testing and eye inspection by a school nurse includes not only the screening test but the observation of the child's behavior, posture, and manifest appearance of the eyes. All of these are essential in a good evaluation of the student's vision. At the time a screening test is made, the nurse should impress the child with the value of good eye hygiene, he must be shown the importance of good vision, and taught how properly to care for his eyes at study,

work, and play, thus creating in the child an appreciation of good vision.

Good vision is often thought of too lightly. Do children ascertain what blindness really means? The school nurse is talking to a group of boys or girls. Soon they will have to choose a mate, not only a mate, but a father or mother for their children. Will their children have good healthy straight eyes or will one of them be a child such as one can see in schools for the blind, in eye clinics, or the public playgrounds, she queries. Many eye conditions are hereditary and congenital, as witness cataracts, cross-eyes, ophthalmia neonatorum, etc.

A school nurse can offer suggestions to the teacher on lighting, desk arrangement, and many considerations of the children's individual needs. She must not hesitate to give the teacher information and pamphlets on sight conservation. All of these will be a help to the nurse in finding the child who needs eye care and it will stimulate the teacher's interest in sight conservation.

In industry, while administering to an employee, the nurse again has an opportunity to stimulate an interest in good vision by using great care and gentleness when removing foreign bodies and in treating any type of general injury, for isn't it true that many accidents occur because of faulty vision? Many industrial nurses find themselves in small plants where there is no safety engineer. The nurse can visit problem areas and offer suggestions that will help to eliminate the eye hazard. She can check on the wearing of safety devices or find the reasons why goggles are not worn. Perhaps the careless employee needs corrective rather than safety glasses. The older employee may need to have it pointed out to him that even though his eyes are not giving him trouble it is time for a good eye examination by an oculist.

The glaucoma patient will not only need eye drops but much teaching and encouragement to keep what sight he has. The good nurse watches over her glaucoma patients with untiring vigilance, repeating and repeating the rules, sometimes encouraging, sometimes threatening. If you keep one patient from an early blindness you will not have been a nurse in vain.

The cataract patient, too, needs both encouragement and enlightenment—enlightenment that medicines and glasses don't cure

cataracts; encouragement because surgery is a means of restoring vision. Operations for cataracts are successful, therefore, the nurse can safely assure patients of serviceable vision with the aid of glasses. She must also prepare the patient psychologically for his stay in the hospital. Explain the necessity of his cooperation. The so-called routine care of a cataract may be that to the nurse but to the patient it is disturbing and often a cause of worry. For example, if he doesn't know in advance that both eyes are covered, can you blame him if he tries to remove the dressings?

The nurse in the hospital has many opportunities for teaching eye health, the protection of the unconscious or the anesthetized patient's eyes. The proper care of eyes in various communicable diseases will prevent serious complication. It is from the nurse that the patient seeks the answers so vital to his recovery. His eyes and ears are attuned to her every word and action. Just the way she adjusts the lamp, the window shade, or moves the bed in favor of eye comfort is an indication of her sight appreciation. The manner in which she cares for his glasses is in itself a procedure which he will notice. The good nurse profits by these opportunities and discusses eye problems with him.

Casually, the nurse may introduce a topic of utmost concern with a question that will arouse the patient's interest. "Do you know the variations of terms 'eye specialist'?" "Does it matter if you see an oculist, ophthalmologist, optometrist, or optician?" "Do you know which of these men are M. D.'s?" The patient suddenly finds himself engrossed and particularly interested in what may previously have seemed to him a dull and irrelative subject. This nurse has become a teaching nurse. A teaching nurse is not only a nurse of the sick but a nurse of the healthy. Sight conservation can be attained if we teach the people how to preserve their vision.

In summary I may say:

1. Develop within ourselves a good knowledge of the normal eye.
2. Avail ourselves of every opportunity to study the conditions affecting sight and the complications resulting from them.
3. Prevent blindness by educating those coming under our influence to an eye health consciousness.
4. Emphasize the care of eyes in everyday nursing in order to stimulate sight appreciation.

Use of Medical Social Workers in Sight Conservation*

Elizabeth E. Payne

AUTHOR discusses the rôle of medical social workers in sight conservation, and points out a variety of ways in which their skills can be utilized in eye health programs.

I ONCE had a student whose solution for the great number of disturbed people among us was the creation of a generation of parents who were themselves perfectly adjusted people. They would then be able to cope adequately with the usual and unusual problems of their children who, with this help, would become well-balanced adults who could rear their children into well-balanced adults, ad infinitum. I could see her point, although I was somewhat concerned because this vision blinded her, for a time at least, to consideration of somewhat more practical approaches to the problem.

Perhaps I am similarly naive, because I find myself thinking of sight conservation in the same way. But if, as we are told, more than half of blindness and an even greater amount of visual impairment are preventable, examination of such an approach may not be wholly impractical. Sight conservation would be achieved: if there were ways of insuring every individual the opportunity of being born with good eyes, of living in such a way, and having medical care as needed, to protect those good eyes; if nonpreventable eye defects were discovered early with prompt institution of corrective and control measures; if those with nonpreventable visual impairment were enabled to function as fully as possible—for to make a limited amount of vision serve essentially

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the same purpose as the full amount of vision is sight conservation through extension. If we only use the information, skills, and resources at hand we can do so much better in each of these ways, that stating them does indeed seem legitimate.

The essential participants in such a program are: medicine, for the discovery and application of measures of control and correction; government, for the control of widespread factors that are inimicable to health, and beyond control by individuals, and for the provision of widely needed services; nonofficial society in its voluntary associations of individuals acting in specific ways in behalf of the common good; and each individual, acting in his own behalf—controlling his behavior and making use of the resources for his care as he needs them.

The scope of sight conservation in this country thus becomes that of reaching 140 million people, so influencing the knowledge, behavior and attitudes of each that he can sustain his rôle or rôles: (1) as an individual whose eyes must be treated or protected; (2) as a member of society with responsibilities toward all individuals, which can only be met by joining with others to take needed action; (3) as a legislator who must provide needed restrictions and services; (4) as a practitioner who must administer services in such a way they can be well used; (5) as a scientist who must supply further understanding of control of causes and of already developed pathology. Behavior is the total expression of the individual. Therefore, are we saying, the scope of the problem is as wide as all the factors which affect the behavior of all men? In a very real sense this is true. This means, therefore, that we find our bearings in relation to a central focus rather than by peripheral boundaries that divide the relevant from the irrelevant.

At heart the problem is the effort to apply specific measures, now known and as they become known, in such a way that the 230,000 needlessly blind, and the unknown but larger number with marked loss of vision, will not be replaced, and that those who *can*, be removed from these numbers. The causes of blindness and visual loss are relatively well known, as, in many instances, are the measures that control them. These focus the problem.

What is it we bring to the solution of this big problem? What are the factors, shaped and emerging from our past, which we must

utilize well in the present, to reach a future of no preventable loss of vision? What are our present concepts of society's responsibility? of government's responsibility? of the individual's? What do we know about people that shows us their problems, and the ways they can be helped to meet those problems, in conserving vision? Similarly, what do we know about the elements in our society, pertinent to sight conservation, which indicate both problems and resources? What, too, of government's ability to discharge its rôle?

It is, of course, false to imply a separation of society and government. Government is one of the expressions of society—an inevitable expression which has the form it has, because of the basic philosophy of the society in which it exists. Religion, art, education, formulated economic theory and practices, and the formulated theory of social processes and institutions are other expressions of this basic philosophy of a society. These expressions are both conscious and unconscious, are formulated and fragmentary, and are rarely perceived clearly by many in the culture. I am one who sees these poorly, but who is impressed, nonetheless, with the need for their examination and interpretation that a theory of basic relationships may be formulated, that our practice may be consciously related to it. Real progress is possible in no other way. This affects sight conservation as it does all elements of our national and individual lives.

The sight conservation movement began as an unofficial expression in 1879, when two English physicians, Roth and Dudgeon, organized the London Society for the Prevention of Blindness and the Improvement of the Physique of the Blind. The organization had an immediate purpose: spreading information of Credé's discovery that silver nitrate could prevent blindness of the newborn. Five years later the Society made an award to Dr. Ernst Fuchs, Professor of Ophthalmology, University of Liège, for an essay on "Causes and Prevention of Blindness," in which he mentioned occupation, living conditions, economic factors, climate, and race, as influencing eye diseases.

The factors in these beginnings are easily discernible. A scientific discovery which could prevent an illness usually leading to blindness was made; something specific could be done by clearly designated individuals to prevent loss of vision, if they knew about it.

So these two physicians, concerned for the welfare of their fellows, organized and undertook this second step. It was a neat, specific job which clearly made sense. Dr. Fuch's essay as the second development stands in marked contrast. It is an instance of a practitioner with convictions and a point of view. In contrast to silver nitrate to prevent ophthalmia neonatorum, Dr. Fuch's belief that social factors influenced eye diseases is nonspecific, may have been relatively unconvincing, certainly did not indicate definite action that promised predictable results. Both of these types of factors have continued in the sight conservation movement, with a continuous increase of the specific as scientific advancement is made. Both have been used as a basis for attempting to get people, designated or not, to behave differently in ways that affect their eyes.

Individuals usually emerge to become leaders in causes out of deep concern that something be done to control a threat which they feel menaces them or their fellows. Initial action may be spurred by something definite, as in the case of silver nitrate, or may arise wholly out of the magnitude of the threat, in which case the resulting investment of interest and effort eventually yields tools for attack. When leaders of wisdom and intensity are present, the movement gains support and becomes increasingly effective. Motivated in this way and growing along these lines, voluntary organizations have played the major rôle in the sight conservation movement in this country. Chief among these is the National Society for the Prevention of Blindness, organized in 1915 after approximately ten years of antecedent activity. This organization now has a $273,400 annual program—convincing evidence of society's concern that sight be conserved, and of its confidence that the National Society for the Prevention of Blindness is effective in that rôle. There are forty-five similar regional, state, and local organizations with the same purpose, working autonomously, but related to the National Society for the Prevention of Blindness.

In sight conservation, as is usual, governmental action came later —to a large extent as the result of the voluntary activity which brought realization of the extent of the problem, of the need, and of some of the things to be done about it. Many important preventive measures have a legal basis; some are federal, many are in

the states. The current status of legislation in the states and its implications for sight conservation has been well summarized as follows:

"First, adequate authorization for prevention of blindness work may already exist in statutes or discretionary powers granted to administrators. It is necessary to keep the administrator informed of needs and of the possibilities of office, if the authorization is to have any value. Second, an inconceivable amount of prevention work is already being done by a score of government agencies, but these efforts lose much of their potential power by being poorly integrated. Third, positive governmental action of the future will require certain structural changes in government. This should not cause fear or insecurity since government service seems to be an expanding rather than contracting field of action. Finally, the truly great need at the moment is for a willingness on the part of government officials to see the problem of prevention of blindness as a comprehensive program, not merely as a special phase of the work of some one governmental bureau or bureaus; as a program in which all can cooperate, and not one in which personal or professional interest must be safeguarded."*

Important also is our philosophy of the *function* of government if, and when, it engages in prevention of any kind. Is it to protect the nation from the weakness of its citizens, and therefore from the burdens that would be put upon it by their incapacities? Or is it the positive one of insuring each individual the maximum opportunity "for life, liberty and the pursuit of happiness?" While governmental action resulting from these two concepts of responsibility may at times be the same, in the long run clarification is necessary. It is obvious that as the basic motivations for governmental action differ, so must the approaches to government designed to influence its action.

It is difficult to say whether we are currently in a transitional or just developmental phase in this country regarding philosophy of prevention in government. Without doubt it is confused. The state has accepted prevention, not as a general principle which guides decisions, but to a limited extent and with regard to selected matters. For example the increased federal appropriations for maternal

* John W. McConnell, "State Authorizations for a Prevention of Blindness Program," Supplement, *The Sight-Saving Review*, Vol. XII, No. 1, March, 1942, Publication 378, revised 1947.

and child health is prevention; but slashes in other federal appropriations are indications the government has moved away from responsibility for prevention in matters of economic welfare. Perhaps this confusion and contradiction in government is only the backward phase that is part of the process of social change. In any event may it not mean that sight conservation will be forwarded by all that leads to clarification of government's responsibility for prevention of any kind?

Medical social workers came into the sight conservation movement 19 years ago when the National Society for the Prevention of Blindness added a worker to the social service department at the Massachusetts Eye and Ear Infirmary to work with glaucoma patients. This came about at the urgent request of Dr. George S. Derby, chief of staff. Speaking of medical social work before the Section on Ophthalmology at the Annual Session of the American Medical Association, in 1931, Dr. Derby said:

"We have had it for 22 years, and have built up a strong department. I venture the assertion that of all the developments of ophthalmologic practice as applied to hospitals which have taken place during the past 25 years, this is by far the most important."*

This is certainly strong praise, which Dr. Derby backed up in stating that in two years the number of glaucoma patients kept under care had more than tripled, and the number saved from blindness by surgery had doubled.

Convinced from this experiment that medical social workers *did* make a real difference in the number of individuals who benefited from eye care sufficiently to prevent blindness, and that leaders in ophthalmology were eager for this service, the National Society for the Prevention of Blindness undertook a program for the introduction of medical social workers into clinical eye care. The program was twofold: additional professional education for the preparation of social workers to work with eye patients; and assistance to medical institutions wanting medical social workers in their eye services by placement of one of these specially qualified workers and partial payment of her salary for a demonstration period after which it would be continued by the hospital. This program was

* George S. Derby, "The Need of Medical Social Service in Eye Clinics," *Journal of American Medical Association*, January 30, 1932.

carried on until June, 1942, when it was interrupted by the war. From it came concrete gains both to the sight conservation movement and to experience valuable in pointing the way ahead.

Concrete gains were these: 44 medical social workers with special preparation for work with eye patients, 35 of whom were in medical social work ten years later, either working directly with eye patients or in prevention of blindness agencies, or in positions of leadership and importance where their influence was reaching many; 8 medical institutions in which medical social work in eye care was demonstrated, 7 of which have continued or extended this service. What the programs demonstrated of importance for the future, is: (1) the ready acceptance of medical social work as a part of effective clinical eye care, *in those places where medical care itself has reached its best development* (i.e., medical schools); (2) the questionable wisdom of placing upon a newly prepared worker the responsibility of introducing medical social work into an institution. Medical social work is thus seen as a part of medical care that is highly developed. This is supported by experience elsewhere, which has repeatedly demonstrated that premature introduction of medical social work into a medical institution is relatively useless for the institution and definitely harmful for medical social work. Again, the sum total of medical social experience verifies the result of the Society's experience (which is too limited to support conclusion by itself) that a medical social worker undertaking the responsibility of introducing medical social work into an institution must have degrees of maturity and breadth of professional skills found in few new graduates of our professional schools and only in the better than average medical social work practitioner.

Adding all of this together, I believe that medical social workers in clinical eye care can contribute importantly to sight conservation; that development and attention to this use of them should be fostered, not only by the National Society for the Prevention of Blindness, but also by the 60-odd official and nonofficial state and local organizations that are working for sight conservation; and that such extension should be with well-qualified medical social workers in situations ready to make appropriate use of this service.

In the past 15 years medical social workers have gone into agencies that were not administering medical care. Although they ob-

viously do not practice medical social casework in such agencies as they do in clinical medicine, they have other services that are very useful in these agencies. Some of these uses of medical social workers have been sound, others less so; altogether enough has been done that we now have some body of experience to evaluate. I believe it is important that we do so—not to raise the question of whether medical social workers have any rôle in sight conservation outside of clinical eye care, but rather to see as clearly as possible what the rôle is.

Concern with its own function as it matures and develops is one of the characteristics of a profession. By some criteria social work has not yet become a profession, by others it has established the right to be so accepted; by all indications it is moving in this direction. Such growth will be fostered by social workers' knowing what they have to offer, and doing it with increasing skill. Since everything is in the process of change, so is social work function. That change must be guided, and must be soundly related to the technical competence of social workers, to the emerging needs of society, and to the other services—technical and otherwise—that are concerned with meeting those needs. Medical social work shares this responsibility of social work of which it is a part. It is therefore valid to look carefully at what medical social workers can bring to sight conservation.

How to intrigue others and catch their attention, make them want to do something, know what to do, and then do it, is the essence of a sight conservation program. Such a process results in the fashioning of services and controls, by some; use of them, by others. Health education is one of the fundamental techniques in this undertaking. How does medical social work share in it?

Medical social workers are not technically skilled in health education. To be sure, many, perhaps most of the clients, their families, and others working with them, emerge from a casework experience with a medical social worker with some better understanding of the illness for which they were under care. It is also true that it has been well established that some of the most effective health education is that which is a part of medical care. Obviously this opportunity should be utilized more fully. But health education is not the function of the medical social caseworker, who in helping the client must be free to use it or not as it will foster his function of

helping the client find and do that which is best for him about his own problem. In the medical setting, health education is a function of the nurse; in public health nursing it is the primary function. In sight conservation agencies, it may be the responsibility of an expert in mass education of the public.

Although the responsibility must thus be centered where there is technical competence for it, the whole staff of the prevention agency shares in this problem. The part of the medical social worker with a specialization in eye care is derived from his knowledge of what eye trouble, visual disturbance and medical care for it, mean to the people who experience them, to those who are close to them, to those who are remote but wish to protect others and themselves from similar experiences. While information of this sort certainly is not the medical social worker's exclusive property, medical social work is the only one of the professions involved that has this as central in its basic discipline and function.

The other principle component of medical social work is some knowledge of and skill in specific ways of working with people in characteristic situations. The first of these is the medical social casework in which a disturbed or handicapped patient is helped to take hold of his medical care and use it. This, as has been said, is practiced primarily in clinical medicine. The second is working with professional and agency colleagues in the discharge of their common function, in such a way that the particular contributions of each are integrated and effective. The third is working with people in real or potential positions of relevance or leadership, in the mobilization of their resources, personal and otherwise, toward specific goals in the common good.

Although each of these situations has its own distinguishing characteristics, they all have common principles which are important. Each is a process of interaction between people who are working together for a specific purpose in which the professional person has responsibility for helping the other achieve the goal he has selected. The other person or persons *may* use the professional one's help in the selection of his goal, drawing both from the worker's information of pertinent facts, from his attitudes, and from their relationship. The help that is given at this point is in reinforcing the others' ability to clarify and select.

Much of a person's ability to work toward his goal lies in its being thus selected by him. (This is equally true for groups of people working together, where the process of selection differs, in part.) Because he wants to reach this end, he is in a position to use help, if he needs it, and if it is acceptably given. The person must feel that the aid offered will in truth help him accomplish his purpose; he must have expectations that that help is appropriate, to be able to take hold of it and use it. Aware of the necessity of such motivation whenever one person undertakes to help another in any of these ways, the social worker sets up interaction between himself and the person (be he client, associate, colleague, or just fellow citizen) in order that such focus and expectation may be created.

Other basic characteristics of these kinds of helping are the worker's awareness of the *process*, his controlled and consciously selected rôle in guiding and forwarding that process so that the other person may achieve his purpose with the greatest possible sense of strength and accomplishment. Out of such feeling grows the ability to go on to the next step as it unfolds, whether it be facing the children at school still wearing glasses after a strabismus operation, or setting up eye care for children after a vision testing program has been successfully launched.

Skills of this sort can be used in many ways in sight conservation activities. Because they really *are* what is very much needed in some parts of the program, it is important both for the program and for the worker that his rôle be defined to make full use of them, avoiding responsibilities which require other investments of time and energy. In this way medical social workers can make their contribution with the many others who are working to enable each to do what he must to protect our eyes and those of our fellows.

Occupational Therapy in Eye Wards*

W. O. G. Taylor, Major, R.A.M.C.

DESCRIBES activities which may be used as occupational therapy for patients in eye wards, calling attention to the fact that squints and the one-eyed may especially be helped by such therapy.

OCCUPATIONAL therapy is really no innovation. Florence Nightingale evidently believed in it when she wrote ". . . a little needlework, a little writing, a little cleaning would be the greatest relief the sick could have if they could do it."

But as an organized and purposeful therapy it really dates from the last war, when, to quote the *Canadian Journal of Occupational Therapy*, ". . . the need for occupation among convalescent soldiers became so apparent that short courses were given in Toronto." In 1928 this was extended to civilians, with the result that throughout Canada and the United States there is a highly organized and well-developed system of occupational therapy both in hospital and for private patients in their homes; with excellent training schools where students receive a thorough grounding in the anatomical, physiological and psychological basis for their work. In Scotland, so far as I know, the Astley Ainslie Institute, Edinburgh, is the only civilian hospital participating in this work; indeed, I believe it is the only place in Britain where eye patients receive such treatment.

Why should it be called a "therapy"? "The underlying theory behind it is that the provision of interesting and productive tasks for unwell people will assist them in accomplishing a cure," according to J. Cunningham. This is obvious in general medical and surgical cases.

It is obvious that if a muscle is wasted one can give it exercise without the patient's knowledge by prescribing a craft which will

* Paper read to the Scottish Ophthalmological Club, October 27, 1945, and reprinted with permission from the *British Journal of Ophthalmology*, August, 1946.

call this particular muscle into play. But it is not so obvious in the case of diseases of the eye. Generally speaking rest and not exercise is required. Here it might be said that the cheiroscope, used in the treatment of strabismus and heterophoria, is but a form of occupational therapy. One might well consider that careful thought should be given to the possibility of using crafts to achieve binocular fusion with the added psychological impulse of real interests. For example, by analogy with nerve palsy elsewhere, there must come a stage in ocular nerve palsies where exercise is required, and this might be achieved by weaving or stool seating with wools of complementary colors in the fashion of anaglyphs.

Apart from muscular anomalies there is one class of patient for whom much more must be done than at present—the unfortunate individuals who have lost an eye. For these it is advisable to lose no time in re-education in depth perception. This can be started within two or three days of the operation by giving them simple patterns to draw on paper and cut out—I use old X-ray films and old black X-ray paper. The rather dull walls of the ward have been decorated with cut-out swallows flying and swooping.

This pattern making can be extended to fretwork—at first, very simple. Weaving or stool seating (but not basketry because of its association with blindness) can also be introduced. Once ambulant, hammering of nails along a line drawn in the wood, and each to a specific depth, is a good exercise and forms a quantitative measure of recovery. They can quite well employ this time making themselves a knitting machine. Table tennis and darts should be introduced when ambulant, and the therapist should be the opponent to grade the necessary skill required. The next stage is drilling—with equal demands on accuracy and neatness, metal beating (making simple ash trays), and cross-stitch embroidery and tapestry. The final stage is when they can beat the occupational therapy worker in the game of "Pick up Sticks"—a game requiring a high degree of coordination. These stages may be carried out while an outpatient.

These two classes, squints and the one-eyed, are those for which the therapeutic side is obvious. What is its advantage to the remainder—the majority—of eye patients? Here it is certainly psychological. Unlike military hospitals there is not the same necessity to retain civilian patients in an eye hospital for long, but neverthe-

less a substantial number are lying, unable to read or do jig-saw puzzles like the patients in a general ward. Their minds are active and their fingers itching to do something. The women may knit, but the men have nothing, and even knitting may pall. Here I quote the *American Journal of Occupational Therapy and Rehabilitation* on the institution of occupational therapy in a children's ward: "Treatments kept the children busy and contented; they were much happier and easier to handle; it reduced rowdiness and restlessness; and the general nursing service was improved by the lack of promiscuous calls that frequently result from the absence of something constructive to do." This point may appeal to the matron.

I have demonstrated nine different crafts suitable for bed patients, roughly graded in terms of the amount of vision required, although all can actually be performed by the blind. The craft prescribed and progress report can be made on a card such as that demonstrated.

Now as to cost—I have ascertained these in detail for a hospital the size of the Glasgow Eye Infirmary (120 beds). Permanent equipment would cost about £12, and expendable materials £85. This latter would be recovered from patients by charging cost plus 30 per cent for wastage. The salary of a graduate occupational therapist is £225 per annum rising to £275. Astley Ainslie training school provides the 18 months' to 2 years' course required and has difficulty in supplying the big demand that comes from hospitals and firms in England. The detailed costs are laid before you. There is no need to limit it to the hospital walls—an occupational therapy shop or even club for outpatients can extend this to patients' homes; and your private patients in nursing homes may well be grateful for this useful an satisfying occupation to relieve the tedium of a private ward.

Some Crafts Suitable for Eye Patients Requiring Occupational Therapy

1. *Rug Wool Weaving—Bath Mat.*—This is first weaving project as materials are coarse and work can be done by sense of touch.

2. *Persian Rug.*—Knotting simple and no eyestrain as in rug making on canvas, although finished product is the same. Different colored wools kept in different boxes.

3. *Knotting.*—Bag using rug wool. Material soft but coarse and easily handled. Colors should be carefully chosen so that patient can distinguish them.

4. *Macrame Cord Knotting.*—As patient progresses use cord instead of rug wool. Choose coloring with care. (Many say that red hurts the eyes.)

5. *Knitting Machine.*—This can be used with any size of wool depending on the degree of vision required. If necessary it can be done entirely by touch. A crochet hook issued.

6. *Basketry.*—Good craft, as much of the work can be done by a sense of touch. Must be used carefully by the therapist lest the patient associate the craft with the blind and worry unnecessarily about his sight.

7. *Sea Grass Weaving.*—Using ready-made and simple pattern eye patients expend more physical energy at this than in working with wool. Bending over is avoided by having the work at the correct height.

8. *Weaving on Scarf Loom.*—(1) Winding wool and warp requires little vision. (2) Threading of loom done by patient and therapist. (3) All pain or contrasting colors used—care to be taken in choice of color. (4) Careful choice of pattern, degree of concentration, and precision may be varied.

9. *Tablet Weaving.*—Slightly more difficult craft. Once technique is understood patient is profitably occupied without strain to vision. A good bed craft as it can be adjusted to patient's position.

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The Undeveloped Eye*

F. Elizabeth Jackson, M.A.

DISCUSSES the rôle of occlusion and orthoptics in treatment of amblyopia.

WHAT is an undeveloped eye? This term satisfactorily describes the condition known as *amblyopia ex anopsia*. An undeveloped, or amblyopic, eye is one in which vision is considerably poorer than that of the other eye and which cannot be corrected by glasses. In addition, no pathologic condition can be found to account for this defective vision. We must keep in mind that the "undevelopment" pertains only to visual acuity, not to size or shape of the eye or any of its component structures.

A difference of two lines in the reading ability of the two eyes, as tested by the Snellen chart at 20 feet, is accepted as the minimum difference in visual acuity for a diagnosis of "undevelopment," or amblyopia. Usually the difference is much greater; the vision of the poorer eye frequently is reduced to near-blindness. In our experience, the vision found in an untreated amblyopic eye is most frequently 20/200; that is, the patient can read at 20 feet what he should be able to read at 200 feet. Such a visual acuity is insufficient to permit even ordinary physical activities. We must further bear in mind that this acuity is no better at near, and may be a handicap in such a routine matter as eating.

This reduced vision is caused by non-use of the eye in early life. Non-use in an adult would not cause it. The nature of the visual reflexes accounts for this. Some of these reflexes are present at birth and remain relatively unchanged throughout life. Others are conditioned reflexes; that is, they are dependent upon usage for their development and for maintenance of that development. Visual acuity does not reach full development before the age of eight

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years. Thus, if some obstacle arises in infancy or early childhood which causes disuse of an eye, its visual reflexes (at least those which are not innate, but dependent upon usage) either do not develop or, if development is arrested at an early stage before these reflexes become fixed, they are gradually annihilated.

Obstacles to Development of Visual Reflexes

There are, in main, two obstacles to the development of the visual reflexes: (1) anisometropia and (2) monocular strabismus.

Anisometropia is a condition characterized by a marked difference in the refraction of the two eyes. One eye may be much more hyperopic, that is, more farsighted than the other; or one eye may be farsighted and the other nearsighted; or one eye may be normal while the other is markedly far- or nearsighted. This difference results in disparity in the size and clarity of the retinal images received by the two eyes, so that fusion of these images is made difficult since they are not identical. To overcome this dilemma, the image of the poorer eye is suppressed.

Strabismus, or monocular squint, is a condition in which one eye constantly deviates. When an eye first begins to deviate, two images are seen because the eyes are no longer in a parallel position. This makes fusing of the images impossible. Diplopia (double images) is very annoying and not long tolerated by the mind. Suppression of the image in the squinting eye soon takes place.

Figures show that strabismus is the largest contributing factor to the development of amblyopia. Percentages in one series of cases studied show that amblyopia occurred in only 3 out of 400 normals or .75 per cent. It was present in 6 per cent of anisometropic cases (24 out of 400 cases). Seventy-two per cent of the squint cases studied had amblyopia.[1] Of 250 squint cases seen at the Erie Orthoptic Clinic since October, 1946, 125 cases or 50 per cent showed an amblyopia of one eye.

Suppression is a cortical inhibition of the retinal image. It is not merely a matter of disregarding or ignoring the image seen with one eye, but an active suspension of vision in that eye. When suppression becomes habitual and constant, the eye is in disuse and its vision deteriorates. This deterioration has been shown by experimentation on amblyopic eyes with vision of 20/200 or less to con-

sist in loss of pattern vision without notable impairment of light perception and spatial projection[2] (the latter two functions being subcortical).

Since disuse is the cause of most amblyopic eyes, the cure is use; and treatment consists in enforced usage. In some children the vision in the weak eye will not improve. These individuals are considered to have congenital amblyopia (poor vision from birth) and not amblyopia of disuse. There is no way of differentiating between these two types of amblyopia except by results of treatment. If no improvement is noted after some months of treatment, the case is considered to be congenital.

Treatment

The first step in treatment is refraction or examination for glasses. If any error is present in either eye, glasses are ordered for constant wear in order that the greatest clarity can be obtained without effort as soon as vision begins to develop in the poorer eye.

The second step is occlusion. The only method of forcing a child to use an amblyopic eye is by covering the good eye completely until the vision in the weak eye is developed as much as possible. This is called occlusion. Occlusion must be constant and complete to ensure results. A patch must be worn constantly except at night when it is removed to ease any irritation resulting from its constant application during the day. A patch which comes off easily or can be lifted will not bring the desired results. We have found after prolonged experience that a piece of moleskin or heavy adhesive placed on the good eye, below the eyebrow and extending well up along the edge of the nose and adhering to the cheek below the eye, is the best type of patch for eyes with very poor vision. It is in cases where vision is extremely low that there is a great temptation (practically a necessity) for peeking out of the good eye.

After the vision has reached 20/50, the moleskin patch can be replaced by a patch on the lens of the glass, since this vision is usable and the child is by now accustomed to relying on his poorer eye. When vision is equalized, occlusion is made partial, that is, the good eye is covered part of the time, either several hours a day or certain days a week, in order to maintain the improvement gained. If good vision can be maintained in each eye until the age of ten

years, when visual development is certainly complete, little deterioration will then occur.

Let me stress the necessity of constant occlusion from the beginning of treatment to the point where vision is equalized. A few hours of patching daily is not only insufficient, but it creates problems of cooperation on the part of the child. He does not become accustomed to the patch, continues to resent the periods when it is placed on his eye. It is much simpler for both child and parent to endure three or four days of acute discomfort and two or three weeks of very poor vision, for at the end of that time, the patch is taken for granted and, in most cases, considerable improvement will already have been made. Occlusion is a prolonged process at best, and removal of the patch only prolongs it further, and puts off the day when it can come off for good.

Various types of occluders are made commercially and are available at optical supply stores. I have not found any of these to be truly efficient in cases where the vision is extremely low since they fasten onto the glasses, and it is a simple matter for the child to loosen the glasses and peek from underneath without being detected. It is amazing how soon a child adjusts to poor vision and improves in his ability to get about. Near vision also improves, in some cases, apparently more quickly than distance vision.

The age at which occlusion is begun is also an important factor in the results obtained. Failure is frequently due to "too little and too late" occlusion. The consensus is that stable return of vision is not probable after the age of eight years (depending somewhat on the age of onset and on the vision at the beginning of treatment).[3] The earlier amblyopia begins, the more difficult the cure, since the visual reflexes have had less time to develop, and we are dealing with actual first development of vision rather than with the restoration of vision that has been lost.

Length of Time of Treatment

As to length of time involved in treatment: it is impossible to arbitrarily set any length of time due to individual variation in cases and to the inability of the doctor or technician to check on cooperation. We can state that vision is likely to improve more rapidly at first, reaching 20/50 anywhere from six weeks to three

months. Further refinement of visual acuity is slower usually, possibly because the vision had never originally developed beyond this point. It is also generally agreed that if no improvement has been noted after constant occlusion for an average of three to six months, failure must be conceded. The younger the child, the more rapidly is improvement noted. Occlusion of various kinds may be kept up for a period of two years or more with worth-while results. Usually the period is shorter.

One may wonder what is happening to the good eye which is not being used during this period of occlusion. It may, in time, begin to lose vision. After five years of age, the danger of this is relatively small. In younger children, loss of vision will occur more rapidly, but, on the other hand, improvement in vision of the poor eye also occurs more rapidly. If any loss does occur, it can be regained once occlusion is discontinued. Thus, frequent vision checks are important during the period of occlusion not only to check the progress being made by the poor eye but also to check the status of the covered eye. A three weeks' interval has been found to be the most satisfactory, and is practical in most instances.

During the period of occlusion, exercises should be given to stimulate the poor eye to see. Definite work should be planned for the child. Coloring and cutting out pictures, comic books, tracing, stringing beads and a few moving pictures are excellent inducements. This work which can be carried out daily in the home does much to shorten the period of occlusion. It is also supplemented in the clinic by exercises inducing use of the poorer eye along with the better eye.[4]

Evaluation of results of occlusion is made difficult by variability of factors involved. Only a few ophthalmologists find a very high percentage of so-called congenital amblyopia (those cases which do not respond to treatment) among their patients. Usually when no improvement is noted, the late age at which occlusion was begun and poor cooperation seem to be the factors militating against recovery of vision.[5]

Results of Treatment

A study of amblyopic cases conducted by Dr. Morgan[1] may serve as typical of results achieved: His patients were divided into two

groups: (1) amblyopia associated with anisometropia and (2) amblyopia associated with squint. In the group associated with squint, 16 out of 18 cases obtained 20/30 vision. In the group associated with anisometropia, 5 out of 12 cases obtained 20/30 vision. The percentage of cures in this group was lower—42 per cent as against 89 per cent in cases associated with squint.

So far, granted that occlusion has been successful in equalizing the vision of the two eyes, our treatment has only given the child two good eyes. It has not enabled him to use them together. Few cases spontaneously achieve normal binocular vision as a result of occlusion. What we have actually achieved is a second "good eye" to fall back on in case of disease or injury to the dominant eye. Although this is no mean achievement, the obstacle that originally produced the amblyopia remains to be corrected.

Development of Binocular Ability

The last step in treatment is the development of binocular ability. Our final aim is to teach the child to use both eyes together (an ability which up to now has been precluded by the difference in vision of the eyes). Once we obtain constant use of both eyes, maintenance of the vision developed in the poor eye is ensured.

Our problems now are the same as those presented by any squinting child, since amblyopia occurs in squint irrespective of type, cause or size of the deviation. Our work at first must be carried on under artificial conditions which make it easier for the child to use both eyes. Various instruments have been designed for this purpose. First, we try to make the child aware of two images and get him to accept them as natural under the artificial conditions set up. Our next and most fundamental step is to get him to see these two images in their proper position in space, individually and in relation to each other. When this is accomplished, he learns to fuse these images at the angle of squint. We then gradually draw both images outward toward a parallel position, the fusion-hold created by the use of the two eyes at the starting point enabling him to follow this withdrawal and straighten his eyes. The amount of deviation that can be overcome in such a manner is more or less limited, and if the deviation is found to be larger than the child can overcome by fusional effort, surgery is performed to set the eyes in

a more nearly parallel position. Our efforts from this point are to establish a normal range of fusion permitting ease of focus at any distance, and refinement of stereopsis or depth perception.

The last step in treatment is the transfer of this binocular capacity under artificial conditions to daily usage. At this stage, various types of homework are extremely important, and the cooperation of child and parent is the essential for its success. We do not always obtain this ideal result of perfect binocular vision, and causes of failure may lie at any point along the line of treatment. Improvement in vision in some instances does not result from treatment. Faulty localization of the images may not be correctible. Transfer to daily usage may not occur. Occasionally paralysis of a muscle may contraindicate any or all steps of treatment. However, the benefits of good vision are so important and loss of vision so disastrous, that prolonged treatment in any case where hope of improvement is justified, is worth the time and effort involved.

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The Eyes of Infancy and Childhood*

James H. Delaney, M.D.

DESCRIBES eye difficulties and diseases which may occur in childhood, and emphasizes that "the neglected eyes of the infants and children of today are the eyes of the Blind Pension recipients of twenty years from now."

As a member of the program committee and as one of the local ophthalmologists cooperating with the Pennsylvania Association for the Blind, may I bid you welcome to our meetings of today. I am hopeful that you will find your day both enjoyable and profitable.

I have been assigned a topic to talk about today—"The Eyes of Infancy and Childhood." Before the day is past, I am sure that we are bound to find a certain amount of duplication of effort in our discussion but I am sure that even this will not be in vain as the best points can be impressed more fully by repetition.

I propose to discuss a few of the conditions met by nurses and social workers in the newborn child, then to discuss some of the more common diseases of the eyes of infants and end with a discussion of visual defects in the school child.

Congenital Anomalies

Alfred Cowan, in his excellent summary of the causes of blindness in Pennsylvania, gathered from statistics on 15,000 people—now over 21 years of age—who were examined by accredited ophthalmologists for Blind Pension, found that 5.2 per cent of the blind cases were due to congenital anomalies and, of this 5.2 per cent, approximately 25 per cent were due to congenital cataracts.

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Among congenital anomalies that one encounters are many cases too numerous to classify and for which one can do nothing. These vary from the child with a complete absence of the eyeball or the cyclopic child with both eyes fused into one (I had such a case which lived for 21 days) to minor defects which cause no visual impairment. We can pass this group by saying that surgery rarely is indicated or of value and, while these cases should be examined by a competent ophthalmologist, the parents should not be sent groping around in a vain hope that someone will be able to restore sight to a hopeless individual. It is human nature to feel that there is someone, somewhere, who can do good, and frequently social workers are prone to encourage this worthless search. Many are the hopeless cases we are called upon to examine who have traveled several hundred miles after having had two, three, or four medical opinions that nothing can be done. Unfortunately, these people sometimes keep searching until they reach the charlatan who adjusts their necks or whatever to the benefit not of the patient but to the unscrupulous practitioner.

Congenital cataracts are of varied types but, if there is no other abnormality present, there is no reason why surgery should not give a good result. The diagnosis is quite easily made and the child should be examined as early as practical. Usually, one does not recommend surgery before the age of six months and frequently not before the child is a year old. However, there is no contraindication to early operation and if the sight of both eyes is impaired, early operation is indicated. Contrary to the operation for cataract in the adult where the eye has to be opened at least 2/5 of its diameter, the operation in a child is a simpler one; but it usually requires a series of operations or needlings. Because a cataract is merely a haziness of the lens within the eye—not a new growth, as so many believe—the eye after a cataract removal is afocal and needs a strong condensing lens or pair of glasses to bring objects into focus. Hence, all patients after cataract extraction need glasses for constant wear. But as can be seen from Cowan's figures this problem cannot be this simple or else there would not be such a great number of adults obtaining a pension as a result of congenital cataracts. As so often happens, when nature produces one error, there are apt to be several and hence many other defects may be

present which, in spite of adequate surgery, leave a defective member of society.

Ophthalmia Neonatorum

Ophthalmia of the newborn is fast reaching that happy limbo of forgotten ailments to which smallpox and diphtheria have long ago retreated. However, 2.4 per cent of all the adults qualifying for blind pension in Pennsylvania, were eligible because of this preventable malady (768 people). Thanks to the original legislation which compels the physician and midwife to use silver nitrate in the eyes of all the newborn—the so-called Credé method of *prophylaxis*—the inroad on prevention had been made but it remained for modern therapy to really step in for the knockout punch.

It is now over 20 years since I was resident physician at the Wills Eye Hospital in Philadelphia, and even then, with Credé prophylaxis, or rather the neglect of someone to use this prescribed preventive, it was necessary to have private wards just for these cases, which wards were always filled. Because the disease was so treacherous and ended so frequently in blindness, it was an unbroken rule that no one could attend these cases—nurse or doctor—without wearing protective goggles. In those days a case would be with us for weeks and months before the smears would be negative, by which time, frequently, the front surface of the eye might have ulcerated away requiring enucleation. How the doctors and nurses hated to care for these poor infants!

Today, I have not seen a case of ophthalmia of the newborn in the past four years. Inquiry at the hospitals here showed only two cases in either hospital in this whole period of time, and the time necessary to cure such a case is not months, not weeks, I might say not even days, but hours. First it was the sulfa drug which started the miracle. Ten years ago, after what I considered a miraculous cure of a couple of cases in three days, I rushed a report to one of the journals. But such reports were pouring in from all over the country. Then came penicillin, locally and intramuscularly, and in a matter of hours, the smears are negative and stay negative. Today, we no longer fear infection of the eyes of the newborn, if diagnosed early, and there is almost no excuse for further generations to have individuals with blindness as a result of this disease.

But let's not get careless. Let's not neglect care at birth and, above all, if we see infection, let's get the patient to the physician for early and proper treatment and rule out 2.4 per cent blindness in the next generation.

Congenital Syphilis

And while on the subject of venereal diseases as causes of blindness in the young, let me mention congenital syphilis. Again using Cowan's figures, 1.1 per cent or 339 people now over 21 years of age are receiving blind pension because of inherited syphilis. This too is a disease which is rapidly reducing in number. We see very little interstitial keratitis—congenital eye syphilis—today, as compared to 20 years ago. Thanks to modern laws, the premarital blood examination, the taking of a blood test on the placental blood of the newborn infant, and the careful checking of the mother's blood during pregnancy, the mother is being cared for and her child is being saved much suffering. What are the chief eye manifestations of this disease? Well, it usually comes on about the age of 7 to 14, affecting first one eye and often, even during treatment, attacking the second eye. There is marked dread of light, a red watery eye, and then the front clear surface, the cornea, takes on a salmon pink color. Vision is markedly reduced and, while recovery is gradual, treatment and loss of school is usually of a year's duration. Frequently, the rest of the triad of hereditary syphilis is present—nerve deafness and characteristic peg-shaped teeth with deep notches in the center. As recovery occurs, there is likely to be an opacity of the cornea, that front clear glassy surface leaving permanent damage to the sight.

It might be well to mention here, the subject of corneal transplantation or grafting. Let's get a few facts straight about this subject. First, there is no such thing as the taking out of an eye and replacing it with another. That is absolutely impossible. What can be done in selected cases is to cut a window from the front surface (cornea), which is partially opaque, and graft into place a small window from the cornea of another individual. Today, the number of cases to be helped by such a procedure is relatively small as compared to the blind people who want sight restored. The operation is of no value in disease inside the eye, in the retina

or sight part, and is successful in only a small number of those upon whom it is tried. The appearance of newspaper articles raise so many false hopes in the blind and near blind that those who are engaged in social work should have a clear understanding of how limited the qualifying cases actually are. And woe be it upon those individuals who, for sympathy's sake, enter the racket of offering their eyes for sale! Fortunately, the newspapers are now wise to this racket and are not carrying the "For Sale Notice" so promiscuously. In this connection, I should tell you that we are desirous of receiving donations of eyes from deceased people for the eye-bank. We have in the hospitals some legal forms to be filled out by the donor so that immediately after death we can remove the eyes and have them shipped air express to the nearest eye-bank—a most worthy bequest!

Cross-Eyes

One of the commonest conditions which anyone notices in a group of children is the child with strabismus—the cross-eyed child. I do not want to transgress on the next speaker's field, but I must take a moment to tell you people what we, as ophthalmologists, advise regarding this condition.

At birth and through the early weeks of life, there is likely to be no coordination between the two eyes and each eye may deviate with little regard to its fellow eye. This becomes, of course, of great concern to the new parents, but fortunately this condition is often a transient one. There is, however, a rather large group of cross-eyed children who are cross-eyed as a result of birth injuries. These are the true paralytic and spastic types and are hardest to deal with. More frequently are we called upon to see little Johnny whose eyes were perfectly straight until the measles last week, or the fall from the high chair, or the whooping cough and, since then, the eyes are hopelessly turned.

We believe that these children should all be seen by an eye physician and as complete an examination as possible should be made. In the post-measles, etc., cases just referred to, the latent condition was present and the disease was just the final straw. The latent condition is usually an extreme degree of eyestrain or far-sightedness. At as early an age as two years, a cycloplegic (a medi-

cine to put the eyes at rest) can be used to determine the amount of refractive error. Frequently, by the wearing of glasses alone the crossed condition of the eyes will be corrected. The next step is cooperation with the orthoptic technician for training. Finally, after glasses and training, if the eyes are still crossed, then the need for surgery arises.

Today, we no longer wait until the child is 14 to 16 years old in a vain hope that nature will straighten the eyes. Now, we like to have these children corrected by the age of six, so that they start school with parallel eyes. Only by so doing can we get complete cure of the defect and only where we deal with a large number of children can we appreciate the damage that may be done to a child's mental make-up by being labelled "wall-eyed."

To summarize cross-eyes, the care includes: early examination; early refraction and glasses; a good orthoptic technician; and later, surgery followed by more muscle training.

Errors of Refraction

No eyesight program would be complete without a discussion of the eyesight of the school child. Thanks to a very good state, city and county program, the vision of our school children is being adequately checked, and parents are notified of visual failures. However, there are a few points to be made in this connection.

The hyperopic (farsighted) child is one who is likely to see well when tested at 20 feet and yet needs glasses very badly. The eye is so constructed that the hyperopic eye which is an eye smaller than the so-called normal, has rays of light focusing behind the retina. By the exercise of the accommodation, a muscle action, these rays can be made to focus on the retina and the child have normal vision. But this muscle action takes a lot of nervous energy which may manifest itself by headaches, by red scaly eyes, by nervousness, fatigue, by poor general health, with resulting poor class work. As practically all children are born hyperopic, this group is the hardest for the school nurse to pick up because, as I have said, the vision is likely to be normal. It is only by careful refraction, after the use of medicine in the eyes, that the defect is uncovered.

Here, I must add a word of caution. Such a child, if he requires a very strong glass, may exercise his accommodation along with his

glasses under the stress of a visual check-up in school. The result is that the glasses are doing the work and the muscles are doing the work and hence two men are doing the same job. The result is that distant vision blurs temporarily and one of the "men" has to give up the job. Hence, the examiner in school takes off the glasses—the eye muscles in this case are working and lo! vision is perfect without the glasses.

Home goes a note: "Take off Johnny's glasses," or "See your eye doctor," or some other message. And then Mother comes running. Just got Johnny's glasses from you or Dr. Jones one month ago and they are no good—the school nurse told me they were no good! Comes along an attempt to explain a technical problem to a wrought-up mother, with a frequent result that the child, badly in need of glasses, decides for himself not to wear them any more. Those who check the vision of children with glasses which are thick in the middle (convex), should bear this little thought in mind.

And then, finally, there is the myopic or nearsighted child. The child upon whom you are checking vision cannot see the chart, cannot see the board at school. This child, if neglected, is likely to fail miserably in school because he cannot see distance work properly. Fortunately, these cases are easily recognized and, when properly corrected, respond in a most surprising manner. Unfortunately, myopic children are usually great bookworms and, while we do not restrict their activities, we do insist on good illumination and good posture.

The old saying, "the children of today are the men and women of tomorrow," might in our case be changed to read, the neglected eyes of the infants and children of today are the eyes of the Blind Pension recipients of twenty years from now. Let us all do our best to prevent this.

Note and Comment

National Society's 1948 Conference.—Plans for the 1948 Conference of the National Society for the Prevention of Blindness are progressing. Sessions will be devoted to the following topics: "The Educator's Responsibility for Sight Conservation"; "Sight Conservation Activities in the Field of Public Health"; "Sight Conservation Activities in the Industrial Field"; "Program Planning in Prevention of Blindness"; "Opportunities for Sight Restoration." The Conference, as previously announced, will be held April 5, 6, and 7, 1948, at the Radisson Hotel, Minneapolis, Minnesota, and reservations should be made by applying directly to the hotel.

Vision Testing Project Announced.—Upon invitation of the Division of Research in Child Development of the Children's Bureau to participate in a study of vision testing, the National Society for the Prevention of Blindness and collaborating agencies have spent much time in working out plans of procedure. The purpose of the study is to evaluate practical methods of vision testing suitable for use by school teachers or school nurses.

The cooperation of the Missouri State Division of Public Health and the St. Louis City Board of Education was enlisted in obtaining St. Louis as the city where the study is to be made. About 1,200 children will receive not only the routine vision tests given by teachers or nurses, but an eye examination by an eye physician in Washington University Eye Clinic, in St. Louis. We can thus learn which vision testing methods are the most efficient, and how accurate each test is in comparison with the eye physician's complete examination.

The study will have the benefit of the advice of a committee of nationally recognized eye physicians, representing the American Academy of Ophthalmology and Otolaryngology, the Section on Ophthalmology of the American Medical Association, and the American Ophthalmological Society. The members of this commit-

tee are: Dr. William L. Benedict, Rochester, Minnesota, chairman; Dr. S. Judd Beach, Portland, Maine; Dr. Alfred Cowan, Philadelphia, Pennsylvania; Dr. Richard C. Gamble, Chicago, Illinois; Dr. Thomas H. Johnson, New York, N. Y.; and Dr. Lawrence T. Post, St. Louis, Missouri. The Federal Office of Education, the National Education Association, the American Public Health Association, and other related groups, will also be represented; and several members of the National Society's staff ~~will~~ serve as consultants in giving the tests, keeping the records, and analyzing them. A report on the study will be made and recommendations will be available which, it is hoped, will lead to a more uniform and practical procedure in testing the eyesight of school children.

Leslie Dana Award.—The Leslie Dana Gold Medal, awarded annually for outstanding achievements in the prevention of blindness and the conservation of vision, was presented this year to Dr. Frederick H. Verhoeff, of Boston, Massachusetts. The medal was presented by Dr. Lawrence T. Post, of St. Louis, during the Faculty Luncheon of the American Academy of Ophthalmology and Otolaryngology, in Chicago, on Thursday, October 16. Dr. Verhoeff was selected for this honor by the St. Louis Society for the Blind, through which the medal is offered by Mr. Leslie Dana of St. Louis. This highly prized token of recognition in the field of public health is given upon the recommendation of the Association for Research in Ophthalmology.

Eye Institute Held in Oak Ridge, Tennessee.—The National Society participated in a three-day institute at Oak Ridge which undoubtedly will have far-reaching effects. Several hundred persons, representing ten different state departments of health, education, and welfare, came for intensive work in eyesight conservation. The institute was under the direction of James G. Aldrich, consulting safety engineer, who worked closely with National Society staff members in planning the program. Other sponsors included the local Lions Club, the Department of Education, Health, and Welfare, and the City Management Division.

Participating in the institute from the National Society's staff were Dr. Franklin M. Foote, executive director; Winifred Hatha-

way, associate director; Charles P. Tolman, consulting engineer; and Marguerite M. Furey, R.N., consultant in nursing activities. Delegates were sent representing the following states, in addition to Tennessee: Alabama, Arkansas, Florida, Georgia, Illinois, Indiana, Kentucky, Massachusetts, Missouri, New Jersey, New York, North Carolina, Oregon, Pennsylvania, South Carolina, and Texas, as well as the District of Columbia.

As a result of the institute, steps are being taken to initiate college courses for the training of professional and technical personnel for eye service and for improvement of visual conditions surrounding the job. It is believed that the enthusiasm and stimulation generated by this institute will result in similar institutes in other localities. In fact, the interest was so keen that a committee was appointed to organize a Tennessee Society for the Prevention of Blindness.

Volume on Industrial Ophthalmology Released.—At long last the *Proceedings of a Conference on Industrial Ophthalmology*, printed by Columbia University Press, has been released. This volume contains the lectures given for representatives of ophthalmologic departments of the leading medical schools in the United States, and was sponsored by the Columbia University College of Physicians and Surgeons in cooperation with the National Society for the Prevention of Blindness. Leading authorities in the medical, lighting and safety fields have contributed to the 308-paged volume, which is illustrated and annotated. Copies may be obtained at $3.00 by ordering directly from the Printing Office, Columbia University Press, New York, N. Y.

Eye Institute Attracts Wide Interest.—The National Society's institute for personnel of health, education, and welfare agencies was attended by 37 registrants, who came from Florida, Maryland, Michigan, New York, New Jersey, Pennsylvania, the District of Columbia, and Capetown, South Africa. In addition to lectures, visits were arranged at the Glaucoma Clinic and the Eye-Bank for Sight Restoration; provisions were made for practice periods in vision testing and for demonstration of vision testing devices.

Industrial Ophthalmology Committee Names Chairman.—Word has been received of the appointment of Dr. Albert D. Ruedemann, Detroit, Mich., as chairman of the Joint Committee on Industrial Ophthalmology of the American Medical Association and the American Academy of Ophthalmology and Otolaryngology. Dr. Ruedemann's rich background in the field of general as well as industrial ophthalmology will undoubtedly be a valuable addition to the already active Committee.

A New Book and a Revision.—It is gratifying to announce the publication of a new book, called *Easy on the Eyes*, by Mrs. Winifred Hathaway, associate director of the National Society. The volume, published by the John C. Winston Company and illustrated by Anne Fleur, is printed in clear, legible 14-point type, and presents in fiction form the various aspects of sight conservation, including facts about the eye, lighting and paint, nutrition and the eye, and all those related facts which any junior and senior high school student would recognize as a part of his own experience. Copies of the book may be ordered directly from the publisher in Philadelphia, Pennsylvania.

Mrs. Hathaway's book, *Education and Health of the Partially Seeing Child*, has undergone a revision and is being released by the Columbia University Press, December, 1947. The usefulness of this volume may be estimated by its popular demand. In the few years since its first publication, it has gone through several editions, and the present revision has been arranged because of continued requests for the book.

Eighth Annual Congress on Industrial Health.—The Council on Industrial Health of the American Medical Association will hold its Eighth Annual Congress on Industrial Health in the Cleveland Auditorium, Cleveland, Ohio, on January 5 and 6, 1948. These dates immediately precede the Interim Session of the American Medical Association which will be held in the Auditorium on January 7 and 8. The program of the Congress will include discussions of nutrition, control of respiratory infections, physical examinations, administrative practices, applied physiology, aviation

medicine, radiation medicine and practical expositions of occupational disease management, traumatic surgery and rehabilitation.

Since full use of medical services in industry depends on support from management and the worker, the essential relationships will be discussed.

The Congress sessions are open to representatives of all groups allied with the medical profession in the promotion of industrial health—nurses, representatives of labor and industry, insurance personnel, and industrial and safety engineers.

1948 Institute on Corrective and Remedial Reading.—The Reading Clinic staff, Department of Psychology, Temple University, will again conduct an annual Institute on corrective and remedial reading, scheduled for one week beginning January 26, 1948.

The activities of the one week Institute are differentiated to meet the needs of clinical workers, vocational guidance directors, supervisors and teachers in elementary schools, secondary schools and colleges.

Enrollment is limited by advance registration. This must be confirmed prior to the Institute. For a copy of the program and other information regarding this Institute, write to the Reading Clinic, Temple University, Philadelphia 22, Pennsylvania.

Government Issues Report on Eyesight and Environment in Work Production.—Prefacing a report, *The Influence of Lighting, Eyesight, and Environment upon Work Production*, W. E. Reynolds, Commissioner of Public Buildings, Federal Works Agency, said: "The primary purpose of this study was to find out what happened to the production, welfare, and morale, of a group of office employees when their working conditions were improved so they could see better. Additional objectives were to get engineering data needed for any future program for improving government offices, and to get statistics and other facts that would be useful to industrial management, when they are deciding to undertake a program for improved environment in which their employees work."

The study, in which the cooperation and advice of the National Society were utilized, was carried on over a period of more than two years, and proved that the production of workers in the card-punch operation chosen as the "guinea pig" for the experiment rose very

sharply under the improved environmental conditions. This experiment would seem to have great importance from the viewpoint of private industry and also from the viewpoint of the worker. The industrial manager, who is trying to get greater production at less cost, will of course be interested in the findings, and the worker naturally is interested in getting a better environment in which to do his or her job.

The space chosen for the experiment was a card-punch subsection of the Bureau of Internal Revenue, in which there was old-fashioned lighting, badly soiled surfaces of ceiling and walls, and in general a dim and depressing environment.

In successive stages the lighting was modernized, then the walls and ceiling were cleaned and painted, and lastly the floor and the desks were made light in tone. The tabulating machines were changed from black to a light grayish-green, so that there should be good reflection of light throughout the room.

The eyesight of all the workers was tested and corrective eyeglasses were furnished to all who needed them. Careful measurements were made before and after all of these steps were taken. Production records of the workers in the card-punch room were kept daily by the Bureau of Internal Revenue and turned over to the Public Health Service technicians for analysis and interpretation.

The total cost of the new installation of lighting fixtures and painting and refinishing of furniture and machines amounted to $6,497.78, for a room that has a ceiling 16 feet high and a total of 3,735 square feet of floor area.

While the experiment definitely proved that production was increased under the better environmental conditions, it was not possible to obtain an exact mathematical measurement of the increase in production because during the second year of the experimental period the nature of the work done by the girls in the card-punch room was changed. In the second year, the work was much more difficult because instead of straight tabulating, the workers were required to make an audit of the business information on the income tax returns with which they were working before they began to punch the cards. This audit involved an analysis of the figures entered on his return by the taxpayer. Naturally, this preliminary

study and analysis of the return slowed up the actual production of cards, in comparison with the production of cards during the previous year when there was straight tabulating.

In spite of the greatly increased difficulty of the job in the second year, there was an actual increase of 5.5 per cent in the total number of cards produced. Had the tasks remained identical in both years, it would seem fair to estimate that the actual increase would have been in the neighborhood of 20 to 25 per cent under the improved environmental conditions. In fact, on one of the income tax returns that was only slightly more difficult during the second year, a striking increase of 37.4 per cent was made. The results from a questionnaire given to all the girls in the room, revealed a sharp upturn in morale, with more than 95 per cent approving the change in lighting and 93 per cent approving the change in the color of the walls.

The part of the report prepared by the Industrial Hygiene Division of the U. S. Public Health Service ends with this conclusion: "It would seem that the visual improvement program was a factor that contributed towards increased production and well-being. It is regretted that the changes in difficulty of tax returns A, B, C, D, and E could not be measured in figures, so that the changes in production of cards in 1946 could have been adjusted accordingly. It is hoped that similar studies will be performed in the future which will add further quantitative knowledge on the important relation of visual improvement to productivity and well-being."

Pan-American Congress of Ophthalmology.—Report is received that all indications point to a great scientific and social success for the Third Pan-American Congress of Ophthalmology, to be held January 4 to 10, 1948, in Havana, Cuba. The number of advance registrations indicate that it is likely to have the largest concentration of eye specialists ever attending a Pan-American Congress—more than 500 ophthalmologists had registered by the end of September. One complete session on the program will be devoted to a consideration of the social aspects of prevention of blindness. In addition to maintaining an extensive exhibit at the Congress, the National Society will be represented by Dr. Foote, who is presenting the public health aspects of prevention of blindness, and by

Charles P. Tolman, consulting engineer, who will talk on the industrial aspects.

Eye Laboratory Established in California.—The Estelle Doheny Eye Foundation announces the establishment of an Eye Laboratory located at St. Vincent's Hospital in Los Angeles, designed to provide certain modern ophthalmic facilities badly needed in southern California. According to the announcement, the immediate functions of the laboratory are:

1. To serve as a pathological laboratory for the diagnosis and registration of pathological specimens, with preparation of gross specimens and microscopic slides for ophthalmologists submitting specimens, and for the building up of a museum of Eye Pathology.
2. To serve as a bacteriological laboratory wherein diagnostic scrapings, smears and cultures can be studied, animal inoculations made, and the sensitivity of organisms to various drugs and antibiotics determined.
3. To provide facilities for fundus, gross, and slit-lamp photography, and to maintain a library of photographs and motion pictures for teaching of ophthalmology.
4. To provide an "eye bank" for southern California, with registry of potential donors and recipients. Donor material will be collected, examined and distributed, and facilities may later be provided for limited instruction in corneal transplant procedures.
5. To distribute and loan certain drugs and equipment that are not otherwise available to ophthalmologists in the community.
6. To make available certain special equipment for radiation therapy of the eye for use outside the laboratory.

Dr. Alan Woods, professor of ophthalmology at Johns Hopkins Medical School, Dr. Cecil O'Brien, professor at University of Iowa, and Dr. Phillips Thygeson, formerly professor at Columbia and now associate professor at the University of California, will serve on the Advisory Board. Dr. A. Ray Irvine, professor of ophthalmology at the University of Southern California, will act as chairman of the original board. As part of the Residency Program of the Eye Service of the Los Angeles County General Hospital and certain local Veteran's Hospitals, it is planned to have each resident spend two or three months at the laboratory. It is anticipated too

that a research associate, granted a fellowship in Basic Ophthalmic Research by the Foundation, will be added to the laboratory staff from time to time.

In creating this perpetual foundation dedicated to the conservation and restoration of eyesight, Mrs. Edward Laurence Doheny is endeavoring to insure a flexibility of organization to take care of the immediate practical needs and, at the same time, to provide for eventual development of much needed research in ophthalmology.

Conference on Local Health Units.—The public health and social aspects of sight conservation are becoming more and more recognized. The two-day National Conference on Local Health Units, recently held in Princeton, N. J., under the auspices of the American Public Health Association, has significance for everyone engaged in the prevention of blindness. The Conference attracted members of 65 national citizens' organizations, representing at least 50,000 points of public influence and education. Public health and civic leaders discussed the integration of official and voluntary community programs. The resolution presented by J. S. Jones, secretary, The Minnesota Farm Bureau Federation, quoted below, sums up the content of the Conference:

"Public health is public wealth. The greatest actual and potential asset of the United States of each state and each local unit of government is a vigorous, healthy citizenry. Recognizing the great advances that have been made in preventing unnecessary illness and the maintenance of health, it is still true that there is a wide gap between knowledge and practice in the protection of the health of the people.

"This is a problem that concerns every person. It is at once an individual and collective responsibility. The realization of a high degree of health of the people of these United States cannot be achieved while forty-one million persons are residing in areas without the protection of a local health unit manned by a full-time, well-trained public health official and sufficient staff to render skilled health services.

"This situation has been reviewed thoughtfully by representatives from 65 national voluntary organizations in a conference at Princeton, N. J., under the auspices of the American Public Health

Association. As a result of their deliberations they are of the unanimous opinion that this is an immediate challenge. The war emphasized the challenge, and now the necessity of organization for a stable future gives it renewed emphasis. The opportunity is great and its achievement practical.

"As representatives of these 65 national citizens' organizations we are now prepared to urge upon each such organization the immediacy of this challenge and the great opportunity it offers, and to urge further that vigorous steps be taken by each agency through national, state, and local branches to include in their programs of work completion of health unit coverage of all areas so that at least minimum protection may be given to the maintenance of health of every person."

Social Work Scholarship Grants.—Following ~~up~~ the National Society's announcement of a number of one-year scholarships of $1,000 each for students interested in professional education, to qualify for positions in the field of sight conservation and prevention of blindness, ~~six~~ students from widely scattered areas have ~~been~~ selected. They ~~are as follows: Mrs. Mary Anderson, of Seattle, Washington, who~~ will study at the Graduate School of Social Work, Washington University, Seattle, Washington; Miss Mary Carrington, of Baltimore, Maryland, who will study at the Graduate School of Social Work, Howard University, Washington, D. C.; Mr. Yehia H. Darwish, of Cairo, Egypt, who will study at the New York School of Social Work, Columbia University, New York, N. Y.; Miss Mary R. Love, of West Roxbury, Massachusetts, who will study at the School of Social Work, Boston College, Boston, Massachusetts; Mrs. Mary Lou Prawl, of Los Angeles, California, who will study at the Graduate School of Social Work, Los Angeles, California; and Miss Mildred E. Wheeler, of Augusta, Maine, who will study at the Scho[illegible] of Social Work, Boston University, Boston, Massachusetts.

Industrial Sight Conservation in New Jersey.—Readers of the REVIEW will be interested in the development of the work which the National Society's industrial department instituted in New Jersey on the "Industrial Sight Conservation Program." According to the *Industrial Hygiene Newsletter* of the U. S. Public Health

Service, this is the first state-wide sight conservation program ever launched in the United States. The program was planned in conference with all official as well as professional and other interested organizations. The project in New Jersey is starting with a practical demonstration of a complete modern eye program in five plants, and it ultimately will reach all industry in the state. It is confidently expected that the methods, procedures and results will be helpful in the inauguration of similar programs in other states.

Current Articles of Interest

Ophthalmology During the War and in the Future, Sir Stewart Duke-Elder, *American Journal of Ophthalmology*, September, 1947, published monthly by the Ophthalmic Publishing Company, 700 North Michigan Avenue, Chicago 11, Illinois.

Citing the devastation of war-torn Europe and calling attention to the fact that it takes at least a generation or two to restore the background of research which abounded in various centers in Europe, the author points out that for the present the survival and revival of ophthalmology depend upon the United States.

Ocular Findings in One Hundred and Twenty-Eight Juvenile Diabetics, Isadore Givner, M.D., and Catherine Lodyjensky, M.D., *New York State Journal of Medicine*, June 15, 1947, published twice a month by the Medical Society of the State of New York, 20th and Northampton Streets, Easton, Pa.

This study of 128 diabetic children was made at a camp of the New York Diabetes Association. Although no follow-ups were possible, the retinal findings were of interest. The ages of the children ranged from five to nineteen years. The length of time that these patients had known they had diabetes ranged from one to sixteen years.

A summary and conclusion of findings are provided by the authors:

"In a routine fundoscopic examination of 128 diabetic children, 3 were found to have retinal hemorrhages and 1 a diabetic cataract. Since none of the patients had complaints referable to vision, and since the importance of retinal hemorrhages in regard to a better evaluation of the case has been emphasized, it would seem good medicine to study every diabetic patient under a mydriatic. Special emphasis should be put on pinpoint hemorrhages and aneurysmal capillary dilations as they can be overlooked easily, unless the picture is constantly kept in one's mind."

The Use of Color in Industry, Ethel M. Spears, Management Research Division, *The Conference Board Management Record*, May,

1947, published monthly by the National Industrial Conference Board, Inc., 247 Park Avenue, New York 17, N. Y.

This author summarizes the information on the industrial use of color which was obtained by the questionnaire method from companies with established color programs. The National Industrial Conference Board sent inquiry forms to approximately 350 such companies in the United States and Canada. Many of the color programs were too new for analysis; however, 68 companies reached conclusions which may be valuable to concerns planning to introduce color programs. Of the 68 companies 56 plan to expand their present color programs.

The topics discussed include: elements of color, power of color, color and perception, working out the program, effects of color, and employer comments. All color programs are designed so as to increase safety and improve health, the primary areas of attack being: traffic lanes, plant hazards, special equipment, machinery, general equipment, interiors, and pipes. They utilize ratios of brightness recommended by ophthalmologists and lighting experts.

Visibility and color perception regarding such factors as proportion, weight, size, distance, and space are affected by contrasting colors. For example, bright objects appear to be larger than dark objects of the same size; and dark objects appear to be heavier than bright objects. In areas of intense light a bright background is confusing; while in areas of dim light, a bright background aids employees in distinguishing important objects. Visibility can be improved by contrasting colors through properly directing the employee's attention to important work areas.

Suggestions are made that colors in paints for walls be selected which reflect about 50 per cent of the light—for floors, those which reflect 20–30 per cent of the light. In both cases the paint should be flat rather than glossy. Such colors relieve monotony, eyestrain, glare, and shadows.

Among other factors discussed are: improvement in employee attitudes, employee health, turnover, absenteeism, quality of work, and individual production.

Cataract Extraction by the Vacuum Method, Oscar B. Nugent, M.D., F.A.C.S., F.I.C.S., *The Illinois Medical Journal*, May, 1947,

published monthly by the Illinois State Medical Society, 715 Lake Street, Oak Park, Ill.

The author reviews the developments in the vacuum method of cataract extraction, describes his own experience with this technique, and presents tabulated results (on 200 operations) of the method as it has developed today. He states that any technique used for intracapsular extraction can be used with the vacuum method of extraction, the only difference being in the instrument used for grasping the lens and its manipulation in delivering the lens.

Dr. Nugent summarizes his discussion as follows:

"(1) It is interesting to note that of the 200 patients, 103 were females and 97 were males. The average age for the women was 65 years and for the men, 64.5 years; the oldest was 86 and the youngest 37 years of age.

"(2) The incidence of rupture of the capsule during extraction is less with the vacuum method than with the forceps.

"(3) Rupture of the capsule and vitreous loss have been greatly reduced in the author's experience by the use of the axis traction technique."

Migraine as Seen by the Ophthalmologist, F. A. Holden, M.D., *Southern Medical Journal*, September, 1947, published monthly by the Southern Medical Association, Empire Building, Birmingham 3, Alabama.

Of the theories advanced as to the cause of ophthalmic migraine, this author favors the allergists' theory that the cause is food, particularly protein. His studies of more than fifty patients having ophthalmic symptoms disclosed that all had a protein sensitivity. By removing protein foods such as meat and milk from the diets of these patients, their attacks became less frequent or were eliminated.

Ophthalmic migraine is characterized by paroxysmal headache preceded by visual disturbances. Some substance is released in the blood which, one theory explains, causes a primary vasospasm; this produces pre-headache symptoms, followed by secondary vasodilation, which causes the headache. Another theory attributes migrainous symptoms to allergic reactions and a primary vasodilation mechanism followed by vasospasm. Treatment can be effective only if administered at the onset of pre-headache symptoms.

Thrombosis of the Cavernous Sinus, Samuel L. Fox, M.D., and G. Brooks West, Jr., M.D. *The Journal of the American Medical Association*, August 23, 1947, published weekly under the auspices of the Board of Trustees, 535 North Dearborn Street, Chicago 10, Illinois.

This article discusses thrombosis of the cavernous sinus, a term used to include cases of phlebitis, thrombophlebitis, phlebothrombosis and aseptic thrombosis. Three cases with unusual aspects are reported. Of these, one resulted in total blindness although the patient recovered.

The authors provide the following conclusions:

"1. Thrombosis of the cavernous sinus is commoner than is generally supposed.

"2. The prognosis is still grave in spite of advances in the use of chemotherapy, anticoagulants and antibiotic agents.

"3. The treatment of thrombosis of the cavernous sinus is purely medical, and surgical intervention is only indicated at the sight of the origin of the infection to eradicate the focus.

"4. The combined use of sulfonamide compounds, antibiotics (penicillin, streptomycin and so forth) and anticoagulants in large doses is strongly advised. If the case is unresponsive to one of the sulfonamide drugs another should be substituted, and the same is probably true of the antibiotic agents.

"5. It is our opinion that the early employment of heparin and 'dicumarol' administered simultaneously is desirable."

Book Reviews

A HAND-BOOK OF OCULAR THERAPEUTICS, Sanford R. Gifford, M.D. Philadelphia: Lea and Febiger, 1947. 336 p. ill.

Dr. Derrick T. Vail has taken over the revision of this standard work because of the untimely death of Dr. Gifford.

The present edition is of particular significance because it includes those therapeutic agents which during the war period have been developed and accepted. The section on physical therapy is particularly instructive and Dr. Vail has included sections by Cordes and Bellows and has quoted liberally from recent writings. The rather inappropriate section on muscular anomalies which appeared in previous editions has been omitted.

The reviewer would suggest that the photographs illustrating various disease conditions could be improved and that colored plates would be more instructive.

This work is a decided *must* in every ophthalmologist's library. It is valuable as a textbook and as a ready reference for therapeutic technique.

JOHN N. EVANS, M.D.

WHY PUPILS FAIL IN READING, Helen M. Robinson. Chicago: University of Chicago Press, 1946. 257 p.

This book will be of interest to all teachers and specialists who are trying to understand the etiology of reading disability. In the first part the author analyzes the literature on the subject of reading disability and in the second part she summarizes the data for 30 cases. In the final chapter the author reports the chief findings of her study, calls attention to their implications, and points out problems meriting further study. There are excellent bibliographies at the end of each chapter in the first part, and a more general bibliography on reading disability at the end of the book.

Mrs. Robinson was fortunate in securing the cooperation of specialists in neurology, psychiatry, social work, ophthalmology, and speech correction in making intensive studies of 30 children in

a wide chronological age range who presented reading disabilities. The cases were drawn largely from the Chicago area and were examined repeatedly over a five-year period. The special investigators aided in the analysis of causal factors and instituted or recommended appropriate therapy. The chief anomalies found in 22 of the cases were rated in terms of their relevancy as causal factors and are summarized here in graphic form.

The author concluded from her study that the causes of reading disability are complex and that no single abnormality accounts for the difficulties these children showed in learning to read. The most seriously retarded showed the greatest number of anomalies. Certain factors presumed to be causes of reading deficiency proved to have little relation to difficulty in learning to read. Social, visual, and emotional difficulties appeared most frequently as causal factors.

Workers with the visually handicapped will be interested in Chapter II which summarizes research on visual maladjustment as a cause of reading disability, and in the summary in Part II of the results of visual examinations reported for each of the 30 cases and indications from the findings concerning the causes of reading disability.

In spite of the elaborate diagnostic procedures this study has not unearthed anything that is strikingly new concerning the causes and correction of reading disability. There are several shortcomings in spite of all the comprehensive data reported. The first of these is the lack of information on the school history of each case, from the first grade. The author states that it was not possible to evaluate the methods of teaching reading used with these pupils in the years before the study was begun. The study lacks "controls" which are needed to determine to what extent the anomalies found in the disability cases may also be characteristic of normal readers. Another shortcoming is the scanty information given on the details of retraining methods used with each case. Although the speech examinations were thoroughgoing there was no comparable attention to the *language* examination and rating of each child's abilities in oral and written English except as the Binet Test results give this information indirectly. At many points the opinions of the experts are accepted in lieu of objective information. It would seem

unwise to draw any sweeping generalizations from detailed reports of no more than 22 cases.

GERTRUDE HILDRETH, Ph.D.

SQUINT AND CONVERGENCE, N. A. Stutterheim, M.D. London: H. K. Lewis and Company, 1946. 95 p. ill.

This is a very difficult book to read because of the arrangement of material and the use of words not common to ophthalmological literature. The author uses batteries of prisms to train and apparently exercise the eyes of patients suffering from "eyestrain" and muscle imbalances. He believes he is accomplishing unusual "cures" and yet he apparently ran no control series. His data seems inadequate from an investigative standpoint so that the reader cannot evaluate the results for himself.

The reviewer feels that the author of this work has failed to demonstrate the value of his method.

JOHN N. EVANS, M.D.

Contributors to This Issue

Eileen E. Lester, Regional Medical Social Consultant of the U. S. Children's Bureau, was a former executive director of the Maryland Society for the Prevention of Blindness.

Martha C. Zavonia, R.N., is an instructor at the Eye and Ear Hospital, Pittsburgh, Pennsylvania.

Elizabeth E. Payne is assistant professor in the Graduate School of Social Work, University of Southern California, Los Angeles.

F. Elizabeth Jackson is orthoptic technician for the Orthoptic Clinic, St. Vincent's Hospital, Erie, Pennsylvania.

W. O. G. Taylor, M.D., is a practicing ophthalmologist in Ayr, Scotland, who is interested in social aspects of ophthalmology.

James H. Delaney, M.D., a practicing ophthalmologist, is Chief, Department of Ophthalmology, St. Vincent's Hospital, Erie, Pennsylvania.

Book Reviewers: John N. Evans, M.D., is professor of ophthalmology at Long Island College of Medicine, Brooklyn, New York; Gertrude Hildreth, Ph.D., is associated with Teachers College, Columbia University, New York, N. Y.